

### Remarks

Per the petition and fee submitted herewith, the time period for responding to the January 6, 2005 Office Action has been extended by one month to May 6, 2005. Please charge any further fee or credit any overpayment to deposit account. 50-2719.

Claims 1-9 and 14-19 are pending in the application. New claims 20-23 have been added. Support for new claims 20-23 is found in the specification on pg. 9, line 3. No new matter has been added by these amendments.

Based on the above changes and the remarks presented below, the Applicants respectfully request reconsideration of the claims.

### Response to the section 103(a) rejection

Claims 1-4 and 14-19 are rejected under 35 U.S.C. 103(a) as allegedly rendered obvious by US 4,172,054 to Ogawa et al. (Ogawa). The Applicants respectfully disagree.

To render a claim obvious, a prior art reference, must suggested to those of ordinary skill in the art that they should make the claimed composition, and provide a reasonable expectation of success that the claimed composition can be made. Both the suggestion and the reasonable expectation of success must be found in the prior art reference, not in the applicant's disclosure.

Independent claims 1, 15, 16 and 19 recite a biodegradable material comprising a mixture of at least one polymer with at least one cereal grain flour, optionally with an acceptable additive (for example an oxidizing agent). Claims 1 and 19 specify that the cereal grain flour is not subject to treatment or chemical treatment, respectively. Claim 15 specifies that the cereal grain flour is not subjected to any treatment, except to a controlled drying eventually followed by a sifting and/or turboseparation phase. Claim 16 specifies that the cereal grain flour is not subject to gelatinization, destructuring or surface modification of starch in the cereal grain flour. Claims 1, 16 and 19 recite that the cereal grain flour has an average granulometry between 10 and 2000  $\mu\text{m}$ .

The Office Action states on pg. 2 that "the flour as incorporated by Ogawa is seen to be the preferred cereal grain flour and is not subject to the treatment as claimed," and that the only difference between Ogawa and the claimed biodegradable material is the recited granulometry range of between 10 and 2000  $\mu\text{m}$ . However, the flour used in the Ogawa composition is subject to treatment.

Ogawa teaches an improved modeling composition adapted for handicraft articles used particularly for children's play. The Ogawa composition is produced by blending the components for several minutes at elevated temperature (70-100°C) so that the starch is half gelatinized and the gluten is modified (see Ogawa col. 7, line 23-35). The protein (gluten) of the wheat flour contained in the Ogawa composition is further treated with a "salt-out" or astringent agent (see Ogawa col. 4, lines 23-25). The astringent agent added by Ogawa to treat the wheat flour modifies the gluten to increase plasticity and modifies the starch to increase the gellation temperature (see Ogawa col. 5, lines 19-24). The Ogawa composition is also prepared in presence of water (col. 3, line 25).

In the biodegradable material of claims 1, 15, 16 and 19, the cereal grain flour is not subjected to any treatment, except (in claim 15) to a controlled drying eventually followed by a sifting and/or turboseparation phase. Ogawa chemically treats the wheat flour used in his composition with an astringent. The chemical treatment taught by Ogawa is not a controlled drying eventually followed by a sifting and/or turboseparation phase. Claim 16 specifies that the cereal grain flour used to make the biodegradable material is not subject to gelatinization, destructuring or surface modification of starch. As discussed above, the starch in the Ogawa wheat flour is modified by chemical treatment to increase gellation temperature and is gelatinized during production of the composition.

Thus, other than controlled drying and sifting/turboseparation as recited in claim 15, the cereal grain flour used in the claimed biodegradable material is not treated. In claim 16, the starch of the cereal grain flour is not gelatinized, destructured or surface-modified. In contrast, Ogawa teaches the chemical treatment of wheat flour with an astringent, which modifies the gluten and starch in the flour and increases the plasticity and gellation temperature of the gluten and starch, respectively. Moreover, preparation of the Ogawa composition in the presence of water and at an elevated temperature results in the half-gellation of the starch. Claim 16 specifies that the starch in the claimed biodegradable material is not gelatinized, surface-modified or restructured.

Indeed, the present specification teaches that chemical treatment of cereal grain flour, such as taught in Ogawa, results in the presence of functional groups (such as hydroxyl groups) on the starch. Such functional groups inhibit biodegradability of material made from the treated cereal grain flour (see pg. 4, last paragraph). Thus, one skilled in the art would not be motivated to modify the teachings of the present specification with those of Ogawa, as the chemical treatment taught by

Ogawa would result in reduced biodegradability. In fact, one skilled in the art would have no reasonable expectation that the presently claimed biodegradable materials could be successfully produced by following the teachings of Ogawa. The Applicants therefore respectfully request that the obviousness rejection of claims 1, 15, 16, 19, and their dependent claims 2-9, 14, 17 and 18, be withdrawn. For the reasons discussed above, new claims 20-23 (which depend from claims 1, 15, 16 and 19, respectively) are also not obvious over Ogawa.

New claims 20-23 recite biodegradable materials that further comprise an oxidation agent as an acceptable additive. The presence of an oxidation agent enhances the biodegradability of the claimed material.

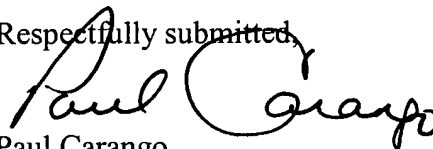
Biodegradability can be defined as the physical and/or chemical degradation of a material at the molecular level, of by the action of environmental factors such as the metabolic processes of microorganisms (see page 1, last paragraph of the present specification). For example, when the cereal grain flour used in the claimed biodegradable material degrades under the effect of various environmental processes, the polymer chains become brittle. Such embrittlement can be accelerated by employing oxidizing agents. In this manner, one obtains complete elimination of the flour-derived part, and partial or total degradation of the polymer-derived part, of the claimed biodegradable material (see page 7, 3rd paragraph, 3rd sentence of the present specification).

In contrast, Ogawa teaches the preparation of a rapid-drying modeling composition, which produces durable articles (Ogawa col. 2, lines 16-18), and which exhibits any desired color without any discoloration or “fadeaway” (Ogawa col. 2, lines 19-22 and lines 65-67). Ogawa produces such rapid-drying, durable and colorfast compositions by adding **anti**-oxidizing agents, such as hydroxytoluene or hydroxyanisole, to a conventional rapid-drying modeling composition (Ogawa col. 2, lines 23-27 and col. 2, line 68 to col. 4, line 10). Thus, Ogawa teaches away from the biodegradable materials claimed in new claims 20-23, which specify that the materials further comprise an oxidizing agent.

Conclusion

In light of the foregoing, the Applicants respectfully submit that all pending claims are now in condition for allowance, which is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Paul Carango". The signature is fluid and cursive, with the first name "Paul" and last name "Carango" clearly distinguishable.

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